DOCUMENT RESUME

ED 104 246 HE 006 368

AUTHOR Heydinger, Richard B.
TITLE The Assessment of Student Performance: A Model and the Reforms.
PUB DATE 25 Mar 75
NOTE 13p.; Paper presented at the National Conference on Higher Education sponsored by the American Association for Higher Education (30th, Chicago, Illinois, March 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS *Academic Achievement; *College Students; *Higher Education; Measurement Techniques; *Performance Factors; Program Evaluation; Speeches; *Student Centered Curriculum

ABSTRACT

This paper presents an overview of the trends in the assessment of student performance that are emerging from learner-centered reforms. A conceptual typology of assessment includes the purposes of assessment, characteristics of assessment criteria, assessment procedures, and uses of assessment products. Learner centered reforms are discussed in relation to this framework. (MJM)

ED104246

Group 46
Tuesday, March 25, 1975

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

THE ASSESSMENT OF STUDENT PERFORMANCE: A MODEL & THE REFORMS*

Richard B. Heydinger
Formative Evaluation Research Associates
Ann Arbor, Michigan

In keeping with the theme of this conference, "Learner Centered Reforms," this paper reviews the changes that are being made in the assessment of student performance by such reforms. Modifications of the grading and credentialing process are extremely important, for frequently it is this portion of the learning process that is most visible and links education directly to the public.

Presented below is a series of implications which have been drawn from the paper which follows. Logically this set of questions would fall at the end of the discussion; however, to emphasize their importance and set the tone for the discussion, they are presented at the beginning.

Implications in the Reform of Student Assessment

1. Will the plethora of new degree structures with their unique assessment procedures create a "tracking system" which is dysfunctional to student mobility?

2. Can individually determined assessment criteria select and sort people in a manner which is acceptable to society? Will the potentially healthy impact of this reform be realized or will there be a retrenchment to the quantifiable?

3. As new assessment procedures place an increasing amount of responsibility on the individual faculty member as an advisor and evaluator, will faculty accept this new role? Are they trained for it?

4. Given an increasing "distance" between the learning experiences of the student and the faculty member, does this increase or decrease the importance of assessment procedures?

5. Is competency-based evaluation and the assessment of experiential learning too costly in terms of human resources and emotional strain?

6. As external degree structures continue to grow in popularity and the academic lockstep becomes a figment of history, will degree granting institutions be willing to lose control over the texture of a student's educational experiences?

7. How will new measures of student performance effect the existing methods of resource allocation and policy formulation?

INTRODUCTION

As postsecondary education broadens its student base, as new technologies are being perfected, and as a new mix of societal factors comes into play, it is not surprising to see the introduction of many educational reforms. In response to this changing

*Research Report prepared for the 30th National Conference on Higher Education sponsored by the American Association for Higher Education, Chicago, March 25, 1975.

environment, new institutions have been opened (e.g., EMPIRE STATE COLLEGE, Minnesota Metropolitan State College) and at existing institutions new degree programs have been approved (e.g., external degrees, time-shortened degrees). Other reforms have left the degree structure intact but have modified the individual course (e.g., computer-assisted instruction, personalized system of instruction, mastery learning). This wide-ranging set of innovations has the potential for revolutionizing the structure of postsecondary education, yet if this is to occur these innovations must demonstrate that they result in effective student learning.

Innovations, even more than proven programs, need strict assessment policies for student work. Skeptics demand rigorous academic standards and bona fide proof of student learning. As the Commission on Non-Traditional Learning has pointed out, the difficulty in assessing non-classroom learning is one of the two major inhibitors to implementing non-traditional programs (Ruyle in Cross, 1974, p. 87). Thus, without acceptable methods for evaluating student achievement, many educators are unwilling to implement innovative programs.

This is not to imply that recent educational innovations have ignored the problems inherent in the assessment of student performance. In fact, many reforms have singled out this component of the educational process as the one most in need of change. Competency-based evaluation speaks directly to the need for reform in assessment procedures, and a number of commissions* have been established to review specific types of assessment.

This paper presents an overview of the trends in the assessment of student performance that are emerging from learner-centered reforms. This is done by first presenting a conceptual typology of assessment and then discussing learner-centered reforms in terms of this framework.

For the purposes of this paper, the "assessment of student performance" is defined to be the process of formally measuring a student's academic accomplishments. Traditionally this is done in the context of a classroom and a letter grade is assigned. Included in this process is the awarding of credit for the purposes of granting degrees. Informal critiques and discussions between faculty and students are not defined as part of the assessment process.

In reviewing the trends in assessment the somewhat artificial distinction is made between curriculum reforms and assessment reforms. Some educational innovations are aimed solely at changing the manner in which students are assessed (e.g., competency-based education). Other innovations alter the curriculum structure and as a second-order implication the assessment process is also modified (e.g. personalized system of instruction). And some innovations change only the curriculum structure while the assessment process remains intact (e.g., off-campus study programs).

AN ASSESSMENT FRAMEWORK

Few researchers have thought of assessment as an abstract topic. Authors tend to discuss a specific reform in terms of how it alters the assessment process or how it departs from the traditional mode of assessment. However, to the best of my knowledge, no one has presented a framework which lays out the important qualities of assessing student performance and then compares reforms along this continuum.

Figure 1 presents an outline of the assessment process. This model is useful for decision-makers who are considering changes to their student assessment practices, for the

*E.G., Cooperative Assessment of Experiential Learning.

model delineates the various aspects of assessment. The outline also provides a useful typology for classifying and discussing the research literature on assessment reforms. With this model as a guide, assessment practices and proposals can be reduced to a common framework for the purposes of comparison and contrast.

As figure 1 indicates, there are four major dimensions to the assessment process: 1) the purposes of assessment; 2) the assessment criteria; 3) the assessment procedures; and 4) the ultimate uses of the assessment product. Each of these components is an integral part of the larger process, and any modification of current practices must recognize the interdependence of these four components. For example, a change in the purposes of assessment may necessitate a modification of the assessment criteria or the assessment procedures.

I. THE PURPOSES OF ASSESSMENT

A frequently ignored aspect of assessment is the original purposes for which the assessment is conducted. Only after the purposes have been carefully spelled out can appropriate criteria and processes be designed. Although many distinct purposes can be generated, the following four themes capture the multi-dimensional aspects of assessing student performance.*

Figure 1

A CONCEPTUAL TYPOLOGY OF ASSESSMENT

I. Purposes of Assessment
   - A. To Facilitate Personal Development
   - B. To Credit and Recognize Learning
   - C. To Enhance Program Development
   - D. To Maintain Quality Control

II. Characteristics of Assessment Criteria
   - A. Parties Determining the Assessment Criteria
   - B. Types of Assessment Criteria
   - C. Measurability

III. Assessment Procedures
   - A. Parties Conducting the Assessment
   - B. Assessment Items
   - C. Frequency and Feedback
   - D. Documentation

IV. Uses of Assessment Products
   - A. Societal
   - B. Institutional
   - C. Personal

*These four purposes were originally proposed for assessing experiential learning. They are generally applicable, however, to all types of educational experiences (see Cooperative Assessment of Experiential Learning, September, 1974, p. 36).

First, assessment should foster the personal growth of students and contribute to their personal development. A statement taken from the catalog of the College for Human Services (New York) restates this theme:

> A person's performance...should be measured as part of a dynamic and mutual educational process, providing guides and goals in a process which the student internalizes, so that the ability to assess and improve his or her own performance becomes part of the student's professional repertoire. (College for Human Services, 1973, p. 13).

Critics of the traditional grading system have found fault with its punitive nature, saying that the effect of the letter grade system is to put the teacher and learner at odds with each other. Such a system defeats the expressed purpose of personal growth and development. Reforms such as the Personalized System of Instruction (PSI) have attempted to overcome this by establishing a close working relationship among students, tutors, and faculty - thus injecting formative evaluation back into the curriculum.

Second, assessment should credit and recognize learning. Students and educators alike are beginning to recognize the need to credit learning, regardless of its location or context. Increased usage of external examinations to assess prior learning such as the College-Level Examination Program (CLEP) is but one example in this growing field.

Third, assessment should provide information for program development and renewal. By measuring graduates against intended programmatic outcomes, institutions can determine their strengths and weaknesses. Obviously, many colleges and universities have never stopped to translate their lofty goals of "critical thinking" and "problem solving" into assessment criteria.

Fourth, assessment can serve as a quality control mechanism for demonstrating that learning has taken place. These measures can protect the credibility of programs and speak to the needs of accreditating agencies.

In actuality, different assessment practices place various levels of emphasis on these purposes. For example, CLEP was established to credit learning and places minimal emphasis on personal growth and development. The assessment process utilized in a competency centered curriculum may both foster growth and credit learning as it occurs. A comprehensive senior exam is intended to recognize learning, measure students against institutional outcomes, and provide a quality control mechanism. Thus, each of these assessment procedures has a different mix of purpose. Ideally, any resulting process should reflect this original mix of purposes.

II. ASSESSMENT CRITERIA

Parties Determining Criteria. Perhaps the most significant reforms in the assessment process have taken place in the determination of the assessment criteria. Formerly, these criteria were the exclusive domain of the faculty member. Today, however, many programs exist in which the student in consultation with a faculty advisor, determines the criteria against which she/he is to be "graded." Independent study programs which exist on nearly every campus will frequently employ this method, and student determined criteria are the sine qua non of contract learning. Four highly publicized, non-traditional programs have designed their curricula around contract learning: Empire State College (New York), Minnesota Metropolitan State College, the University Without Walls, and Vermont Community College (Houle, 1973, p. 87-119). In all of these programs students and faculty work together to arrive at a mutually acceptable set of criteria. At Minnesota Metropolitan the educational pact, as the learning contract is called, is individually structured to give

students a complete opportunity to demonstrate their real abilities. (Sweet, 1972, p. 222) The University Without Walls program is founded on the tenet that people learn best when they set their own goals (Watson, 1972, p. 225)

This is not to say that all learner-centered reforms have the students and the faculty working together to determine the criteria for assessment. In mastery learning, the personalized system of instruction, and computer-assisted instruction, assessment criteria are solely determined by the faculty member; and students typically have no voice in this process. In external degree programs which use standardized exams to measure learning, the assessment criteria are determined by parties external to the institution. Generally, however, the trend is toward a broadening of the parties who may contribute to the determination of assessment criteria. With the increasing responsibility that is being placed on students to design the goals for their education, it is not surprising to see students involved in the determination of assessment criteria. Many would argue that this significantly strengthens the educational process

Types of Criteria. Once it has been decided who will design the evaluative criteria, the actual criteria themselves must be drawn-up. In the traditional classroom/degree format these assessment measures are usually a set of academic skills. In other words, students are assessed on their ability to complete discipline oriented, academic exercises. Many liberal arts colleges explicitly state goals of personal growth, critical thinking and interpersonal awareness; yet few of these institutions have developed meaningful criteria for assessing progress toward achieving these goals.

In contrast to academic criteria, a significant number of institutions have consciously decided to redefine their goals in terms of demonstratable competencies. These competencies are criterion-referenced and behaviorally anchored. In other words, the standards against which the student will be assessed are predetermined (no grading on the curve) and these must be measurable in terms of behaviors. Popularized by Bloom (Bloom, 1956), learning objectives are the building blocks of competency-based assessment. College IV, one of the Grand Valley State Colleges (Michigan), has structured its entire curriculum around the concept of learning objectives. Each discipline has been divided into a series of curriculum modules. These mini-courses begin with a clear statement of the objectives which the student must attain before credit will be awarded. This reform has taken the traditional liberal arts curriculum and restructured each discipline into a hierarchy of learning objectives and modules.

Other colleges such as Alverno College (Wisconsin), Mars Hill (North Carolina), and The College for Human Services (New York), have redefined their graduation requirements in terms of demonstrated competencies. For example, Alverno has specified eight different competencies* that each graduate must possess. These assessment criteria may be defined as skill sets which are necessary for life or thought of as "clusters of life outcomes." (McClelland, 1973, p. 10) Proponents of time-shortened degrees (Meiners, 1974; Giardana, 1974; Conklin, 1972) highlight competency-based assessment as a viable alternative for altering the present time-based degree format. Without a doubt the movement toward competency-based assessment represents one of the most ambitious and far-reaching innovations ever attempted in student assessment. Competency based education demands tremendous energies of both students and faculty. The costs are high but the potential advantages are great. A competency-based transcript will state in no uncertain terms the demonstratable skills which the student possesses. As employers demand increasing

*These eight competencies are: 1) Communication Skills, 2) Analytical Capabilities, 3) Problem Solving Skills, 4) Valuing in Decision-Making, 5) Social Interaction Skills, 6) Understanding of the Environment, 7) Understanding of the Contemporary World, 8) Understanding and Responding to Arts, Humanities (Alverno College, 1974, p. 3).

specialization and particular skills, competency-based assessment can go a long way toward meeting this need.

Another reform which has modified the criteria for assessment is experiential learning. This type of learning may take two different forms, prior and sponsored. (Cooperative Assessment of Experiential Learning, September, 1974) Prior learning precedes matriculation and occurs independent of an institution. Sponsored learning takes place under the guidance and programmatic efforts of an institution. The evaluation of these experiences varies, and thus it is difficult to generalize about the types of criteria which are used. Some programs require students to demonstrate their acquired competencies whereas other experiential programs attempt to apply the same criteria that are utilized in the classroom. The recently established Cooperative Assessment of Experiential Learning project (CAEL) has brought together 160 institutions to review current practices. (CAEL, December, 1974) From this project should emerge some standards for the assessment of experiential learning.

Measurability In addition, the exactness or measurability of the criteria must be determined. As J. Warren has said, "If course objectives cannot be made explicit enough to be assessed directly, then no justification can be found for the presumption that any method of instruction, traditional or not, is effective." (Warren, 1974, p. 135) Certainly this is one of the challenges to the competency-based system that has been ignored in the traditional system.

In summary, the criteria - who determines them, what they are, and their characteristics - play a large part in any assessment of student performance. Many of the reforms discussed at this conference attempt to meet the need for changes in assessment criteria. Perhaps the most important aspect of this effort is the advent of students into the selection of evaluative criteria. While some people cry out for standards, others recognize that sliding scales have been a part of education for many years. (Baird, 1971 and Chickering, 1974) In addition, many reformers are committed to the notion that "In the final analysis. . . the student's educational program [including assessment criteria] must conform to his life goals and situation as he determines them with the help of an advisor, other faculty members, and even other students." (Sweet, 1972, p. 217)

III. ASSESSMENT PROCEDURES

The model in Figure 1 lists four facets of an assessment procedure. These dimensions are useful for characterizing the traditional system and contrasting it to existing reforms. The following discussion highlights the important changes in assessment procedures.

Parties Conducting the Assessment. In the typical classroom situation, a single faculty member assesses a student's work and assigns to it a letter grade. This procedure works efficiently and minimizes the total effort which must be devoted to student assessment. In contrast to this single party assessment procedure, many reforms have expanded the assessment process to include a diverse set of people. Some combination of the student, student peers, the industrial client, a review panel, a team of faculty members, and/or a group of outside experts may be solicited for their judgments on the grading and credentialing of a student's work. The College for Human Services and Alverno College use community-based professionals to assist in the evaluation of competencies. Experience-based learning programs such as Oklahoma State's authentic involvement project (Lowery, n.d.) and Minnesota Metropolitan's crediting of prior learning include student peers in the assessment of student work. At Empire State College and Minnesota Metropolitan, the final assessment for graduation is conducted by a committee of faculty members.

This expanded set of assessment parties introduces a significant new variable into the assessment process. If each course project is to be reviewed by a team of faculty members and outside experts, a high degree of coordination between institution and

community is necessary. If the degree status of each student is to be individually reviewed by a team of faculty members, this requires a significant expenditure in human energies and resources. These implications are not insignificant for institutions adopting these assessment procedures.

Directly related to the choice of "assessors" is the notion of the training and qualifications which these persons possess. The traditional system has assumed either rightly or wrongly that faculty members through the socialization process of their own education have learned to evaluate academic work. There can be little argument with the assertion that faculty members are not given an appropriate background in the concepts of evaluation and its potential impact on student development.

In competency-based education and experiential learning programs, skeptics can criticize the qualifications which faculty members may bring to bear on a particular project. As these non-traditional programs expand, new students will design individual projects which demand that faculty members operate at the edge of their own competencies (Chickering, 1974). Although these reforms have expanded the assessment process to include a cross-sectional group of assessors, the challenge of qualifications could continue to be a recurring problem, particularly until the "market value" of these non-traditional degrees is established. Related to this issue is the increased responsibility which this learning reform places on the faculty. When discussing time-shortened degrees, Conklin rightfully states, "It takes a certain amount of moral and professional courage for a professor acting alone or with two or three colleagues to say, 'I take the responsibility for denying you your degree.'" (Conklin, 1972, p. 37)

This single aspect of the overall assessment process requires careful attention as these innovative programs mature. With increasing importance being placed on the assessment process and the certification of competencies, faculty members will find the mix of their responsibilities significantly altered.

Assessment Items. From our own educational backgrounds we can each recall the many different items that were utilized to assess student performance. Some instructors placed heavy emphasis on daily quizzes or journals; others relied solely on the final exam or term paper. Some traditional courses required students to complete class projects which contributed heavily in the determination of the final grade. These projects may have been a piece of art, a video tape, or a computer program.

As discussed earlier, many learner-centered reforms have placed the responsibility for assessment design on the student. When students are free to determine their own learning programs, the potential items which can be used for assessment are boundless. As students individualize their learning criteria, the products or outcomes to be assessed will vary with individual preference.

In a move to credit an infinite variety of personal learning experiences, institutions are injecting flexibility into their degree programs by utilizing standardized tests. New York State will credit learning as demonstrated by performance on its College Proficiency Examination (Nolan, 1972); and as of 1972, over 1300 institutions accepted results of the CLEP exams for college credit. (Caldwell, 1973, p. 699) Thomas A. Edison College (New Jersey) is a degree granting institution which offers no instruction. Credit is awarded to students who can perform successfully on a series of standardized tests. (Houle, p. 96)

Testing, although it is designed as a reform to credit prior learning, has not always been received amicably. For example, the faculty at San Francisco State rebelled when they were informed by the administration that credit would be awarded any students who received a score of 25% or better on a battery of CLEP exams. (Whitaker, 1972)

Along this same line, McClelland adds an important caveat to the process of standardized testing when he says, "We should be a lot more cautious about accepting as ultimate criteria of ability the standards imposed by whatever group happens to be in power." (McClelland, 1973, p. 6)

Frequency and Feedback. With new evaluators and new assessment items for measuring student performance, it is not surprising to see that the frequency of evaluation and the timing of feedback have also been radically altered by some of these assessment reforms. Curriculum reforms such as computer-assisted instruction (CAI), modular instruction, and program instruction were designed to modify the frequency and feedback dimensions of the assessment process. Advocates of CAI herald this curriculum reform because it provides instantaneous feedback and reinforcement to the student. Modular instruction breaks the traditional course into "digestible" units. Thus the student can receive academic credit on almost a daily basis, once again shortening the time between learning, assessment, and feedback.

Reforms such as the Personalized System of Instruction (Kulik, 1974) and Postlethwait's Audio-Tutorial (Postlethwait, 1970) method build frequent assessment quizzes into the course structure. This procedure is intended to restore formative testing in the learning process and to allow students to learn from assessment -- not simply to be selected and sorted.

The impact that these modifications have on the total educational process is emphasized when contrasted with the traditional classroom format. In many courses students are assessed at midterm and final exam. The results may be fedback as much as a month later and then a single letter grade may be all that the student receives. In contrast, at College IV (Grand Valley State Colleges - Michigan) the student's mastery exam is corrected by the faculty member or tutor usually in the presence of the student and incorrect items are immediately discussed. In external degree and experiential learning programs, students schedule weekly meetings with their faculty mentor to assess personal progress toward goal accomplishment. Such a weekly accounting can have a formative impact on student work and goes a long way toward the establishment of a student-faculty learning partnership.

Documentation. Any review of assessment practices would be incomplete without a discussion which highlights the bureaucratic record of performance that becomes a part of the student's permanent record. In most institutions this takes on some form of a letter grade with 60% of the colleges and universities offering some type of pass-fail option. (Chronicle of Higher Education, 1972)

Many of the reforms that have been discussed carry with them a signle letter grade indicating that the student has fulfilled the objectives of the course, module, or learning contract. In mastery learning it may be an "M"; in pass-no record systems it can be a "P." These grades may be supplemented with a listing of the learning objectives or competencies which have been demonstrated. Other programs have lengthy narratives assessing the student's work. At Empire State College each learning contract culminates with a "Digest and Evaluation" which summatively evaluates the student's work vis-a-vis the original objectives of the learning contract.

With the tremendous emphasis that is placed on grades in today's educational process - not only by students but by parents, graduate schools, and employers - these most visable changes to the assessment process could cause the greatest difficulty. Attitude surveys have shown that graduate programs (Rossman, 1970) devalue

"pass" grades. Lengthy narrative transcripts, although probably presenting a fairer, more comprehensive picture of a student's achievements, run the risk of being ignored by those who want exactness of a quantitative measure (GPA, 3.75 - SAT, 700). The challenge also rests with new programs to carefully design reward systems which motivate students when only "pass" or "acceptable" is the grade which they receive. Many studies have been done on the motivational effects of pass/fail grading (Lindblade, 1971; Meisenholder, 1971; Sgan, 1970), and the results are mixed. There is little doubt that grades do motivate students (Feldmesser, 1971) but there are also other reward systems to which students will respond. (Goldschmid, 1974)

IV. USES OF ASSESSMENT

Some of the most complicated assessment issues relate to the eventual use of assessment products. The brief treatment of these complex issues in the following discussion should not belie the magnitude of their importance.

Societal. This paper will not debate the worth of social sorting or the growing emphasis on credentials. It is a vast and complicated topic which strikes at the very fabric of today's society. To understand it thoroughly demands a historical perspective (see Schudson, 1972) To debate its future is of the utmost importance. (see Young, 1958) For educators who can have an impact on the assessment processes of their own institutions, it is important to review the uses of assessment in light of its original purposes. From this author's perspective it seems as though the uses and purposes are frequently at odds with each other.

Society has placed the burden of selecting and sorting its talent on educational institutions. This system is so firmly entrenched that it seems unrealistic to expect much of a departure from it. Nevertheless, it is important to understand that education and certification are distinct processes. They do not have to be inextricably linked as they are today. As Astin has pointed out, "If the credentialing function were to be taken over by other agencies, then the college could devote its primary effort to the task for which it is presumably best qualified -- the educational development of the student." (Astin, 1972, p. 188) The benefits may be worth the risk of trying. On the other hand, the thought of an external crediting agency is not particularly appealing either. The issue is complex and there are no easy answers.

Institutional. The challenge lies with the postsecondary educational community to review its own uses of assessment products. The number of credits generated is frequently regarded as a measure of a department's productivity, and often it is utilized for resource allocation decisions. This assessment/productivity measure can fluctuate uncharacteristically as new programs and reforms are introduced. Thus the warning of Conrad, et al. should be heeded:

> Most formulas for resource allocation are widely recognized to be imperfect surrogates for actual educational performance. In times of educational growth, these formulas were accepted by educators to facilitate resource allocation. In times of retrenchment, however, these same simplistic surrogates may be used to make tough and unpleasant educational decisions. (Conrad, 1975, p. 23)

Personal. And without a doubt the most important use of assessment focuses on the student. Just as the original set of purposes pointed to the need for assessment

to foster personal growth, it is important to examine the overall impact that assessment procedures are having on students. Many learner-centered reforms emphasize assessment as a major portion of the educational experience. Certainly this will impact on the students' affective as well as cognitive growth. (Jolosky, n.d.)

A SELECTED BIBLIOGRAPHY

Allen, Edward L., "The Three-Year Baccalaureate," JOURNAL OF GENERAL EDUCATION, Vol. 25, No. 1, April, 1973, pp. 68-76.

Alverno College, "Competence Based Learning at Alverno College," 3401 South 39th Street, Milwaukee, Wisconsin, February, 1974.

_____, "Specification of Developmental Levels: Competencies 1-8," unpublished Milwaukee, Wisconsin, August, 1973.

Astin, Alexander W., "Challenge to the Credentialing Process," LIBERAL EDUCATION, Vol. 58, No. 2, May, 1972, pp. 183-188.

Baird, Leonard L. and Fiester, William J., "Grading Standards: The Relation of Change in Average Student Ability to the Average Grades Awarded," Princeton, New Jersey: Educational Testing Service, May, 1971.

Baskin, Samuel and Hallenbeck, Edwin F., "University Without Walls: Nontraditional Program of Undergraduate Learning," COMPACT, Vol. 6, No. 5, October, 1972, pp. 21-25.

Bersi, Robert M., RESTRUCTURING THE BACCALAUREATE: A FOCUS ON TIME-SHORTENED DEGREE PROGRAMS IN THE U.S., Washington, D.C.: American Association of State Colleges and Universities, 1973.

Block, James H. (editor), MASTERY LEARNING, New York: Holt, Rinehart, and Winston, 1971.

Bloom, Benjamin S. et al. (eds.), TAXONOMY OF EDUCATIONAL OBJECTIVES, HANDBOOK I: COGNITIVE DOMAIN, New York: David McKay Co., 1956.

Caldwell, Edward, "Analysis of an Innovation (CLEP)," JOURNAL OF HIGHER EDUCATION, Vol. 44, No. 9, December, 1973, pp. 698-702.

Chickering, Arthur W., "Assessing Students and Programs - A New Ball Game," NEW DIRECTIONS FOR INSTITUTIONAL RESEARCH, Number 4, Winter, 1974, pp. 53-74.

CHRONICLE OF HIGHER EDUCATION, "60% of Colleges Surveyed are Offering P-F Grading," Vol. VI, No. 22, March 6, 1972, p. 6.

College for Human Services, "Overall Design of the Educational Program," 201 Varick Street, New York, New York, December, 1973.

Conklin, Kenneth R., "The Three-Year BA: Boon or Bust?" AAUP BULLETIN, Vol. 58, No. 1, Spring, 1972, pp. 35-39.

Conrad, Clifton F., Norris, Donald M., Seeley, John A., and Talburtt, Margaret A., "Productivity From the Students' Perspective," draft copy (3/7/75), publication forthcoming, Jossey-Bass, NEW DIRECTIONS series.

Cooperative Assessment of Experiential Learning, CURRENT PRACTICES IN THE ASSESSMENT OF EXPERIENTIAL LEARNING, Working Paper No. 1, Princeton, New Jersey: Educational Testing Service, September, 1974.

_____, "CAEL Project Status Report: December, 1974," Princeton, New Jersey: Educational Testing Service, December, 1974.

Cross, K. Patricia, "The Elusive Goal of Educational Equality," Speech delivered at annual meeting of the American Council on Education, San Diego, California, October 10, 1974.

Cross K. Patricia, Valley, John R. and Associates, PLANNING NON-TRADITIONAL PROGRAMS, San Francisco: Jossey-Bass, 1974.

Davis, James R., "The Search for Standards: Relativism and Emerging Pluralism in Higher Education," JOURNAL OF HIGHER EDUCATION, Vol. 45, No. 2, February, 1974, pp. 145-151.

EMPIRE STATE COLLEGE, Saratoga Springs, New York, (the college catalog), n.d.
Empire State College, "Report of the President's Advisory Committee on Academic Quality," unpublished, n.d.
Feldmesser, Robert A. "The Positive Function of Grades," American Educational Research Association, Annual Meeting, February, 1971, ED: 049 704.
Giardina, Richard C. "The Baccalaureate: Defining the Undefineable," JOURNAL OF HIGHER EDUCATION, Vol. 45, No. 2, February, 1974, pp. 112-122.
Goldschmid, Barbara and Marcel L., "Individualising Instruction in Higher Education: A Review," HIGHER EDUCATION, Vol. 3, No. 1, February, 1974, pp. 1-24.
Gould, Samuel B. and Cross, K. Patricia (eds.), EXPLORATIONS IN NON-TRADITIONAL STUDY, San Francisco: Jossey-Bass, 1972.
Houle, Cyril O., THE EXTERNAL DEGREE, San Francisco: Jossey-Bass, 1973.
Jolosky, Theodore, THE IMPACT OF A SELF-PACED COLLEGE ON STUDENTS, unpublished dissertation, University of Michigan, forthcoming.
Kulik, James A., Kulik, Chen-Lin, Carmichael, Kevin, "The Keller Plan in Science Teaching," SCIENCE, Vol: 183, pp. 379-383, 1 February 1974.
Lindblade, Charles, "Grading Systems: All Win or Lose," COLLEGE AND UNIVERSITY, Vol. 46, No. 4, Summer, 1971, pp. 717-731.
Lowery, Richard L., "Authentic Involvement: A Vehicle for Teaching Creative Design," unpublished, Department of Mechanical Engineering, Oklahoma State University, Stillwater, Oklahoma, n.d.
Lynton, Ernest, "Distinctions Among Key Programs," NEW DIRECTIONS FOR INSTITUTIONAL RESEARCH, No. 4, Winter, 1974, pp. 19-28.
Mars Hill College, "Recommendations Concerning the Competence-Based Curriculum and the 4-1-4 Calendar," unpublished, Mars Hill College, Mars Hill, North Carolina, March 27, 1974.
Mayville, William, "Contract Learning," COLLEGE AND UNIVERSITY BULLETIN, Vol. 26, No. 4, December, 1973, pp. 3-6.
McClelland, David C., "Testing for Competence Rather than for Intelligence," AMERICAN PSYCHOLOGIST, January, 1973, pp. 1-14.
Meinert, Charles W., "Time Shortened Degrees," ERIC/Higher Education Research Report No. 8, 1974.
Meisenholder, Robert F., AN ASSESSMENT OF STUDENT REACTION TO THE PASS/FAIL GRADING OPTION AT THE UNIVERSITY OF DENVER, unpublished dissertation, University of Denver, 1971.
Milton, Ohmer, ALTERNATIVES TO THE TRADITIONAL, San Francisco: Jossey-Bass, 1972.
Moore, Michael Granam, "Toward a Theory of Independent Learning and Teaching," JOURNAL OF HIGHER EDUCATION, Vol. 44, No. 9, December, 1973, pp. 661-679.
Nolan, Donald J., "Regents External Degrees," COMPACT, Vol. 6, No. 5, October, 1972, pp. 3-5.
Postlethwait, S.N., Novak, J. and Murray, H.T., Jr., THE AUDIO-TUTORIAL APPROACH TO LEARNING, Minneapolis: Burgess, 1970.
Richards, James M., Jr., "Assessing Student Performance in College," Report #2, ERIC Clearinghouse on Higher Education, George Washington University, Washington, D.C., May 1970.
Rossman, Jack E., "Graduate School Attitudes to S-U Grades," EDUCATIONAL RECORD, Vol. 51, No. 3, Summer, 1970, pp. 310-313.
Ruskin, Robert S., "The Personalized System of Instruction: An Educational Alternative," ERIC/Higher Education Research Report, No. 5, 1974.
Schudson, Michael S., "Organizing the 'Meritocracy': A History of the College Entrance Examination Board," HARVARD EDUCATIONAL REVIEW, Vol. 42, No. 1, 1972, pp. 34-69.

Sgan, Mathew R., "Letter Grade Achievement in Pass-Fail Courses," JOURNAL OF HIGHER EDUCATION, Vol. 41, No. 8, November, 1970, pp. 638-644.

Spurr, Stephen H., ACADEMIC DEGREE STRUCTURES: INNOVATIVE APPROACHES, New York: McGraw-Hill Book Company, 1970.

Stark, Joan S., "The Three-Year BA: Who Will Choose It? Who Will Benefit?" JOURNAL OF HIGHER EDUCATION, Vol. 44, No. 9, December, 1973, pp. 703-715.

Sweet, David E., "A Model for an Upper-Division Urban College," THE EXPANDED CAMPUS, edited by Dyckman W. Vermlye, San Francisco: Jossey-Bass, 1972, pp. 211-224.

Troutt, Roy, SPECIAL DEGREE PROGRAMS FOR ADULTS, Iowa City, Iowa: American College Testing Program, 1971.

Valentine, John A., "The External Degree," LIBERAL EDUCATION, Vol. 58, No. 2, May, 1972, pp. 199-209.

Warren, Jonathan R. "Awarding Credit," PLANNING NON-TRADITIONAL PROGRAMS, edited by K. Patricia Cross, John R. Valley and Associates, San Francisco: Jossey-Bass, 1974, pp. 116-147.

_____, "College Grading Practices: An Overview," March, 1971, ED 047 164.

Watson, Goodwin, "The University Without Walls," LIBERAL EDUCATION, Vol. 58, No. 2, May, 1972, pp. 222-225.

Whitaker, U., "Credit By Examination at San Francisco State College," COLLEGE BOARD REVIEW, Vol. 83, 1972, pp. 12-16.

Young, Michael, THE RISE OF THE MERITOCRACY, Middlesex, England: Pelican Books, 1958.

Zinn, Karl L., "Computer Assistance with Learning and Teaching," preprint copy scheduled for publication in ENCYCLOPEDIA OF COMPUTER SCIENCE, edited by Anthony Ralston, copyright by Mason & Lipscomb, 1974.

Zinn, Karl L., Refice, Mario, and Romano, Aldo, editors, COMPUTERS IN THE INSTRUCTIONAL PROCESS: REPORT OF AN INTERNATIONAL SCHOOL, Ann Arbor, Michigan: EXTEND, 1974.